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FLY CONTROL IN OHIO BARNS

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Fly Control in Ohio Barns

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INTRODUCTION

Control of flies continues to be one of the major insect problems of dairy farmers. The problem can be divided into two phases: flies in dairy barns and flies attacking animals in the field. This publication deals only with control of flies inhabiting barns.

The house fly, *Musca domestica* L., is the primary pest in Ohio dairy barns during early summer. The stable fly, *Stomoxys calcitrans* (L.), is a late summer pest, both in the barn and in the field. Both species breed in manure and in decaying organic matter. So sanitation is a major prerequisite before good control of flies can be obtained. With poor sanitation, it is extremely difficult to obtain satisfactory fly control. Good sanitation removes breeding sources, resulting in fewer flies to be controlled by chemical means (1).

Little research has been conducted on control of flies in Ohio barns and recommendations have been based on information from nearby states. The occasional reports of failure have provided the only information on the development of resistance to certain insecticides.

During the summers of 1962, 1963, and 1964, a study was conducted of the performance of wall and ceiling sprays of residual insecticides and of treatments with baited ribbons and strips. The major purpose was to compare the effectiveness of several promising experimental compounds with some of the currently recommended insecticides.

This publication is neither a recommendation nor an endorsement of any products mentioned. For current recommendatons, consult with the Ohio Cooperative Extension Service.

MATERIALS AND TREATMENT METHODS

All investigations were conducted on dairy farms in Wayne County, Ohio. These farms represented a wide range of management practices, although all were near average in size of operation. Sanitation practices were variable. In some instances, large numbers of flies were observed breeding in accumulated manure. The most common and troublesome breeding site was in calf pens in the main portion of the barn where the cows were housed while being milked.

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TABLE 1.—Insecticidal Sprays and Duration of Fly Control in Barns in Wayne County, Ohio.

Barn	Year of Test	Insecticide Used in Spray	Concentration of Spray	Treatment Dates	Weeks of Effective Control
			(%)		
A	1963	dimethoate*	1	7/10	8
B	1963	dimethoate	1	6/18	9
C	1963	dimethoate	1	6/18	4
		dimethoate	0.5	8/13	5†
	1964	dimethoate	1	6/17	10
		dimethoate	0.5	8/3	3†
L	1964	dimethoate	0.5	8/17	3
N	1964	dimethoate	1	8/11	6†
D	1963	GC 4072	0.5	6/7	7
		GC 4072	0.5	8/12	5†
	1964	dimethoate	1	6/12	9
G	1963	GC 4072	0.5	6/6	6
		GC 4072	0.5	8/13	6†
	1964	dimethoate	1	7/20	10†
E	1963	GC 4072	0.5	6/6	10
		dimethoate	0.5	8/27	4†
	1964	diazinon	0.5	6/11	12
S‡	1964	ronnel	0.5	7/23	1
		ronnel	0.5	8/18	2
H	1963	ronnel	1	7/2	5
		ronnel	1	9/3	2†
	1964	diazinon	0.5	6/11	5
		diazinon	0.5	8/10	3
F	1964	diazinon	0.5	6/22	6
		dimethoate	0.5	8/31	3†
K	1964	diazinon	0.5	7/9	7
		dimethoate	0.5	9/12	3†
J	1964	malathion	1	6/23	2½
		malathion	1	7/28	0
		diazinon	0.5	8/10	4
M	1963	ronnel	0.5	8/5	1
	1964**	malathion	1	6/9	3½
		dimethoate	1	8/11	6†

*Supplemental dichlorvos bait was used in late season.
†Treatment effective until end of season.
‡Swine barn.
**Barn was fogged periodically with dichlorvos.

The sprays listed in Table 1, with the exception of ronnel in barn M, were applied with a Bean hydraulic sprayer with 6-gallon-per-minute capacity and operated at approximately 80 psi. Barn M was sprayed with a Korlan spray gun at 40 psi. This is a garden hose sprayer which is factory calibrated.

The quantity of spray varied from 24 to 30 gallons in each barn, with the amount used depending upon the area to be covered. A single-nozzle gun was used to wet all surfaces, except mangers, to the point of run-off of excess spray.

Loafing areas of barns were usually sprayed with additional insecticide. However, no attempts were made to drench straw and manure accumulations to prevent fly breeding. Retreatments were made when fly populations started to increase rapidly.

The following insecticide formulations were used in sprays:

Cygon 400 EC (4 lb. dimethoate/gallon)

Cygon 2E EC (2 lb. dimethoate/gallon)

Cygon 267 EC (2.67 lb. dimethoate/gallon)

diazinon 25% WP

Compound 4072 EC (4 lb./gallon)—2-chloro-1-(2,4-dichlorophenyl) vinyl diethyl phosphate

Korlan 24 EC (2 lb. ronnel/gallon)

malathion 57% EC (5 lb./gallon)

Other control measures included:

Bayer 39007 EC (1.5 lb./gallon)—cords containing *o*-iso-propoxyphenyl methylcarbamate

Geigy Snip-Fly Bands—containing 2.0 g. dimetilan per band

Shell Vapona Insecticide Resin Strands—containing 20% dichlorvos in polyvinyl chloride

Shell Vapona Insecticide Resin Strips—containing 20% dichlorvos in polyvinyl chloride

Geigy Snip-Fly Bands were used at a rate of one per 100 sq. ft. of floor. In barn R, the bands were hung in loops from the ceiling, rather than on edge as recommended by the manufacturer.

The Bayer 39007 cords were prepared by soaking heavy cotton cord in undiluted Bayer 39007. Then the cords were dried, cut into 4 ft. lengths, and hung from the barn ceiling at the rate of one per 100 sq. ft. The Vapona resin strands were cut into 4 ft. lengths and hung in the same manner, except in barn S where the strands were suspended horizontally. The Vapona resin strips were suspended near the ceiling at the rate of one per 1000 cubic feet.

Weekly observations were made in each barn. The total number of flies which congregated on a Scudder grid placed at five locations in each barn was used as the population index (2). This method proved satisfactory as long as temperatures were moderate to high. At low temperatures, the fly counts were deceptively low. In general, where the total fly count reached 50 flies, it was judged that control was no longer being obtained.

RESULTS AND CONCLUSIONS

Dimethoate, GC 4072, and diazinon were all highly effective against flies (Table 1). In general, 1% sprays of dimethoate were effective for 2 months or more and 0.5% sprays resulted in 1-2 months of control. One-half percent sprays of GC 4072 and diazinon were equivalent to a 1% spray of dimethoate.

One percent ronnel was effective for 2-5 weeks. However, the hose-on applications of 0.5% ronnel in barns M and S were effective for only about 1 week.

Malathion was also short-lived, with an indication of resistance at barn J. Although the first application gave control comparable to that obtained by Wells *et al* (3), the re-treatment was ineffective. There was no evidence of resistance to diazinon, dimethoate, or GC 4072 in the barns under test.

Vapona strands and strips did not prove to be highly effective under conditions in these tests (Table 2). In addition, their high cost precludes their use except in milking parlors or other small, confined areas where dichlorvos vapor can build up to levels toxic to flies.

Snip-Fy Bands have proven useful in barns where the cattle cannot be removed during a spraying operation. With heavy fly populations or under dusty conditions, they may not perform as well as sprays.

Bayer 39007 cords offer no promise for fly control.

TABLE 2.—Fly Control in Wayne County, Ohio, Barns with Cords, Bands, or Strips Treated with Insecticides.

Barn	Year of Test	Insecticide Treatment	Dosage* per 100 sq. ft. of Floor	Control of Flies
R	1962	Vapona Strands	12 ft.	Excellent
T	1963	Vapona Strands	40 ft.	Good
S	1963	Vapona Strands	10 ft.	Fair
P	1963	Vapona Strips	1†	Poor
F‡	1964	Vapona Strips	1†	Good
R	1963	Snip Fly Bands	½ band	Fair
A	1964	Snip Fly Bands	1 band	Fair
P	1964	Snip Fly Bands	1 band	Good
Q	1964	Snip Fly Bands	1 band	Fair
M	1964	Bayer 39007 Cords	4 ft.	None

*Length of strand or number of bands per 100 sq. ft. of floor.
†Number of strips per 1000 cubic feet.
‡Milking parlor.

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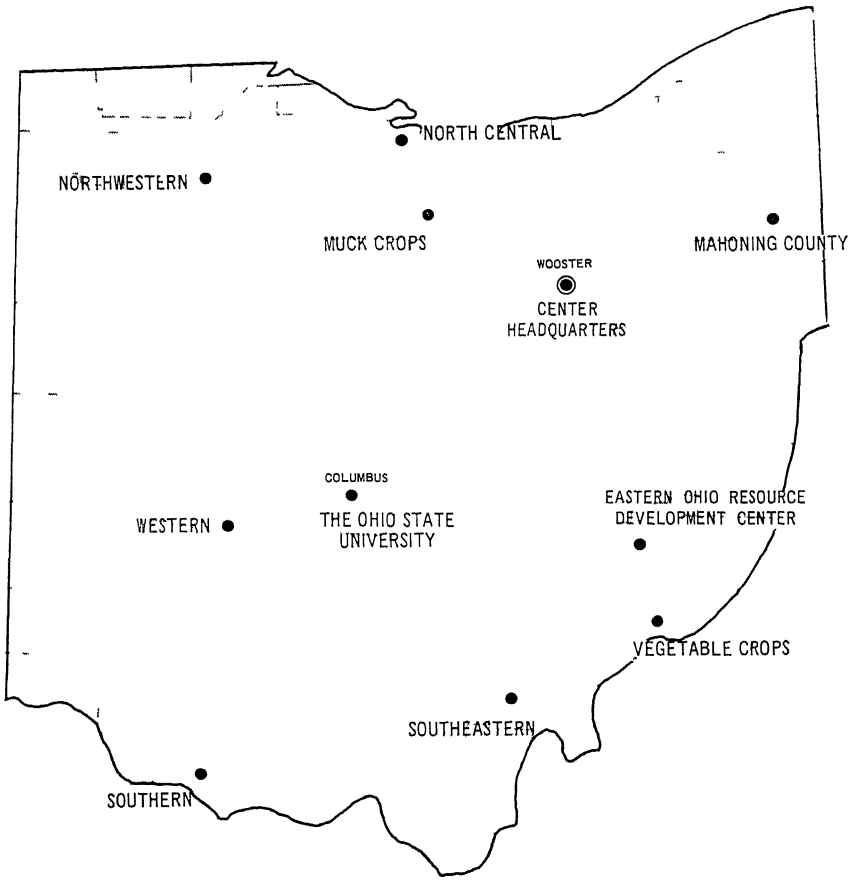

Ohio's major soil types and climatic conditions are represented at the Research Center's 11 locations. Thus, Center scientists can make field tests under conditions similar to those encountered by Ohio farmers.

Research is conducted by 14 departments on more than 6000 acres at Center headquarters in Wooster, nine branches, and The Ohio State University.

Center Headquarters, Wooster, Wayne County: 2017 acres
Eastern Ohio Resource Development Center, Caldwell, Noble County: 2053 acres
Mahoning County Experiment Farm, Canfield: 275 acres
Muck Crops Branch, Willard, Huron County: 15 acres
North Central Branch, Vickery, Erie County: 335 acres
Northwestern Branch, Hoytville, Wood County: 247 acres
Southeastern Branch, Carpenter, Meigs County: 330 acres
Southern Branch, Ripley, Brown County: 275 acres
Vegetable Crops Branch, Marietta, Washington County: 20 acres
Western Branch, South Charleston, Clark County: 428 acres